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Penshurst Place.

PENSHURST PLACE will probably be remembered by American tourists as one of the most homelike of the great show-places of England. The house is placed on level ground in a gently rolling park, where knotty old Oaks stand singly, in immemorial security, on the grassy uplands, and in the hollows where the bracken grows breast-high. Some of these trees are known by the names of distinguished members of the family, or honored guests who have been received there, such as Sir Philip Sidney and Queen Elizabeth. Those who object to the romping character of modern dances may not have noticed a picture in the long gallery in which that illustrious dame is represented as dancing the coranto, a lively Spanish measure much in fashion at the time, in which the lady is lifted at least a foot from the floor by her partner.

The park front of the house is simple (see illustration on page 393), and the park is separated from the home grounds by a low ha-ha, from which the lawn comes up to the gray stone walls, not broken by flaunting beds of gaudily colored foliage plants, but plain and severe, as is suitable for the stern old building.

The pile is long in comparison with its height, as is often the case in old English houses, and bears on its face the marks of having been lived in and added to by many men at various times. The crenelated walls and narrow lancet windows are memorials of the earlier days when the home was only a home when it was possible to defend it, while the larger windows, flanked by Ionic columns, remind one of the work of Inigo Jones and Christopher Wren.

But it is to the garden front of the house, as usual, to which one turns to see the real charm of the place. A wide grass terrace runs very nearly the whole length of the house, and serves as a foreground for one of the most successful attempts at a reproduction of the old English formal garden. About thirty years ago, Lord Delisle and his architect, the late George Devey, designed the garden as it now is, after the manner of those described by Gervase Markham, and that other worthy who disguised his plain English name of Thomas Hill as Didymus Mountaine. From the broad terrace close under the house one looks down on the flower garden, which is on a lower level and crossed by broad, straight gravel walks which meet at a circular fountain in the middle. A low stone curbing inside the wide grass margin of the paths marks a level still lower, where old-fashioned flowers nod gayly over their little Yew enclosures, which are not too high to hide anything but the earth of the beds. By this arrangement of different levels the flowers are seen from many points of view, so that the stroller has a chance to decide whether he prefers to look down at a mass of brilliant colors on a green lawn or to see and smell the flowers by going among them.

On one side of this sunken garden and at right angles to the house runs a long terrace, called in the language of the writers of old Herbals, a "mount." These mounts were very characteristic of old English gardens and were originally meant to bring a little amusement into the long dull days of the women living in the house. The boundary wall of the garden often overlooked a road, and was sometimes more than ten feet high on the outside. Against this the mount was built, an inside grassy terrace, reached usually by stone steps from the flower garden or a lower terrace. Persons walking on the upper level, which was only a few feet from the top of the wall, could easily see all that went on outside, while remaining safe from intruders. At the end of the mount farthest from the house, and in the angle of the enclosing wall, a garden house was built, which gave shelter from showers and sun, and had the further advantage of yet another outlook.

At Penshurst the mount can be reached either from the house terrace or the garden, but the original purpose of the early designers of mounts has been lost sight of, as it overlooks nothing but the home grounds. It must therefore be considered rather as a quaint addition to the plan, and as a pretty finish to one side of the garden, than as being archæologically correct. The walls of the mount and the house terrace are not the least of the attractions of the sunken garden, covered as they are with Ivy, spaliered fruits and tender shrubs that enjoy the extra protection given by the warmth of the brick.

From the garden straight walks lead to the fish-pond, a piece of water some thirty paces long and twenty wide, surrounded on all four sides by a wide grass verge and a high pleached Yew hedge. This little enclosure carries one back to the middle ages, when such fish-ponds were a necessary part of every priory or large manor house, since their inhabitants contributed largely to the larder on the many fast days ordered by the Church. One would hardly feel surprised, in a place like this, if some day one were to come upon a jolly Friar Tuck, gazing down into the clear waters of the pool and smacking his lips in anticipation of the delicious meal he would have from an especially fat and tender carp. Beyond the quiet pond, long walks, bordered by old Apple and Pear trees and bright with many flowers, open little vistas of the park and woodland beyond. In spring these walks are, perhaps, at their best, when the sun throws chequered patterns through the blossoming trees on the gravel, and the borders are gay with flowering bulbs; but autumn has its own charm in the fruit-laden trees and golden and purple glow of the season's last flowers.

As is so often the case in England, a little village of a few dozen houses huddles under the shadow of the great house, and a gate from the home grounds leads into a quiet street bordered with old cottages and their gardens. No railway disturbs the stillness of this hamlet, which can only be reached by driving from the station some two miles away, or taking a coach which runs from Tunbridge Wells. After this has taken its jingling departure, and when the last belated tourist has gone lingeringly away, the shrill voices of children and the cawing of rooks are the loudest sounds heard in the village.

No more charming excursion than this can be made in a day from London. Penshurst is in Kent, "the garden of England," and surely nowhere does it better deserve the name than at a place where there is a continuous succes-

sion of flowers from the first snowdrops until the last Christmas Rose is past. After a day spent here one goes back to the grimy city, with the lungs full of fresh country air, and the mind of memories of the great house standing in quiet dignity in the old park with its glades where the dun deer lie among the bracken.

Emboldened by the action of Congress in practically revoking Mr. Cleveland's Forest Reservation proclamations and by the attitude of the administration toward the whole subject of our western forests, the lumbermen now controling a large block of Big Tree forest on the western slope of the Sierra Nevada in California are making a determined effort to obtain from Congress authority to cut the Sequoia timber in the General Grant National Park. This particular portion of the Sierra Reservation includes about fifteen hundred acres, and is covered with an exceptionally fine growth of Sequoias and Sugar Pines, numbering among its vegetable wonders the great tree known as "the General Grant." This scheme of Californian lumbermen to get possession of this body of timber has been incidentally commented on in several of the papers of the Pacific states, but it is likely to remain generally unnoticed or to be forgotten until the country discovers some day that by a skillfully worded amendment to some appropriation bill it has been again robbed of a great possession for the benefit of a few speculators.

It is unnecessary to remind our readers that these Sierra Sequoias are marvels of the vegetable kingdom, unsurpassed in grandeur, and probably the oldest living organisms on the face of the globe. Every individual is a monument which should be sacredly preserved for the benefit of future generations. To cut down one of these trees is a crime, and it should be a matter of national humiliation that a considerable part of the Sequoia forest has been allowed to pass from Government control into the hands of lumbermen. There was no excuse for this; there would be less excuse in allowing those portions of the Sierra forest which have already been reserved for the benefit of the people to be opened to entry. The lumber, even, is not needed by the community, which can be abundantly supplied from the Redwood forests, and no one but a little group of men who expect to make money by this transaction has any interest in the success of this movement.

Notes on Cultivated Conifers.—I.

THE climate of the north-eastern portion of the United States is not favorable to the best development of coniferous plants, and only a comparatively small number of them can be satisfactorily grown in this part of the country. It is not always that our winter cold is too severe, for many of these trees flourish in mountain regions where the temperature sinks many degrees below the extremes of even the New England winter, but they cannot bear our dry summers and the drying winds of early spring, which draw moisture from the leaves faster than it can be supplied by the roots often fast frozen in the ground when evaporation is most active. Some beautiful and interesting conifers, however, flourish here, and in the following notes we shall publish the results of our observations on cultivated conifers in the northern and eastern states; and as the members of the Yew family are still popularly regarded as conifers they will be included with them.

In the Yew family (Taxaceæ) eleven genera, and in the Coniferæ twenty-seven genera, are now recognized. Of these, however, we need not consider Pherosphæra, Phyllocladus, Dacrydium, Podocarpus, Stachycarpus, Saxegothæa and Microcachrys, all Taxids of the southern hemisphere except Podocarpus, which comes north of the equator into tropical and subtropical regions of the two hemispheres, as none of them can be grown here except as pot-plants under glass. Of the true conifers we can pass by Tetraclinis, a monotypic north African genus, Callitris of Australia and New Caledonia, Actinostrobus with its west Australian species, the African Widdringtonia, Fitzroya of Chili, Patagonia and Tasmania, Athrotaxis of Tasmania, Cunninghamia with its single south China species, Agathis of New Zealand, Australia, the Pacific islands, Brazil and Chili, Araucaria, a pretty widely distributed genus of the southern hemisphere, and in Abietineæ Keteleeria, another monotypic south China genus. Representatives of many of these genera flourish in the gardens of southern California, and several of them will probably thrive in the south Atlantic and Gulf states, but their cultivation at the north except under glass is hopeless.

The genera of Taxaceæ which are available for our northern gardens are Ginkgo, Cephalotaxus, Tumion and Taxus. Ginkgo contains now a single species, although during the Tertiary period it was very generally distributed through the colder and temperate parts of the northern hemisphere with numerous species or varieties of which more than sixty have been described by paleobotanists. It is distinguished by the character of its lateral branchlets, which are sometimes elongated and more often short and spur-like, by its fan-shaped, two-lobed, many-ribbed, deciduous, pale green, clustered leaves, dicœcious flowers, the males in umbels at the ends of the branches, the females in pairs on the sides of slender stalks. The female flower, which consists of a single naked ovule, becomes in ripening a sort of plum-like fruit, the outer layer of the seed-coat growing succulent, and the inner hard and woody. Ginkgo was first made known by the German botanist, Kœmpher, who discovered it in Japan in 1690, and in 1712 published a description, with an excellent figure of the foliage and fruit, in his work on that empire. He had found the tree in temple gardens, and believed that it was Japanese, for early European botanists in Japan had to do most of their botanizing in gardens, and did not realize that many of the most popular Japanese garden plants had been brought from China with the Buddhist religion. Among these introductions was the Ginkgo, which grows nowhere indigenously in Japan, although it is now found in most temple gardens, both in China and Japan; and it is possible that this once widely distributed type has only been preserved by cultivation, for if we are not mistaken the Ginkgo is nowhere known in a wild state. The unusual power of this tree to bear cold and drought would indicate that it had long inhabited some region with a severe continental climate, and if it exists now at all outside of gardens it is probably in some of the elevated districts of western China or of Mongolia, or on the still unexplored mountains of northern Corea.

In old Japanese temple gardens the Ginkgo is frequently one hundred and twenty feet high, with a tall massive trunk six or seven feet in diameter and large drooping limbs sweeping out in wide-spreading graceful curves, and furnished with elongated, leafy lateral branches. Such trees are splendid and impressive objects, especially in autumn, when the leaves which flutter on their long stems become the color of gold. Ginkgo biloba, which is also sometimes called Salisburia, and by English-speaking people the Maidenhair Tree, from the resemblance in the shape of its leaves to the pinnæ of the common Maidenhair Fern, was introduced into the Botanic Garden at Utrecht about 1730. Twenty years later it found its way to England, and in 1784 was introduced into the United States by Mr. William Hamilton, who brought many exotic trees, including the Lombardy Poplar, into this country, planting them in his garden at Woodlawn, near Philadelphia, which, a century ago, contained the richest and most famous collection of plants in America. A male tree flowered in England as early as 1795, but it was nearly twenty years later before female flowers were seen, De Candolle discovering them in 1814 on a tree at Bourdigny, near Geneva. Scions from this tree grafted on a staminate plant produced in 1835 perfect fruits in the Botanic Garden at Montpelier; and fruit-bearing trees are now comparatively common in Europe; in

the United States they exist in Central Park, New York, in Germantown, Pennsylvania, near Louisville, Kentucky, and probably in many other localities, as the Ginkgo of late years has become a comparatively common ornamental tree in this country.

Stiff and almost grotesque in its early years, with slender, remote, wide-spreading branches and sparse foliage, the Ginkgo does not assume its real character until it is more than a century old. There are few trees whose youth gives so little indication of future splendor; and so little picturesque is the Ginkgo in early life, and so badly does it blend with American surroundings that a great landscape gardener, knowing only young trees, declared that it could have no place in our landscape planting. If, on a bright November day, he had seen the great trees in Kamakura, or in the gardens of Asakura, in Tōkyō, he would certainly have recognized the great possibilities of the Ginkgo for picturesque planting. In the United States the Ginkgo is perfectly hardy as far north as Massachusetts, and thrives as well in the south as it does at the north. There are not, however, yet any very large or fine specimens in this country, although the tree planted nearly a century ago in the garden at Hyde Park, on the Hudson River, has begun to assume mature habit and shows that later generations may hope to see eastern America rival eastern Asia in its Ginkgo trees.

The Ginkgo is very easily raised from seeds, which can now often be purchased from dealers and which retain their vitality for several months, and female plants, which are less common than males, may be obtained by grafting; it is easily transplanted and thrives in deep, rich drained soil, in which it will often increase in height from two to three feet in a year. Nurserymen propagate a variety with leaves which are larger and more deeply divided than normal, and others with slightly pendulous branches and with leaves striped or blotched with yellow, but none of these varieties have much to recommend them.

The yellow flesh of the Ginkgo fruit has a most disagreeable, rancid flavor, but the seed-kernel, which resembles the kernel of the Almond, is sweet and palatable. In China the trees are cultivated for their fruit, which is sold in great quantities in all markets, but in Japan, where the fruit is also gathered and sold, the trees are cultivated for ornament only, and usually only in temple gardens. The wood is bright yellow with a close compact grain, and is capable of receiving a beautiful polish; it is, however, soft and easily broken, and is not considered particularly valuable.

The Ginkgo is certainly one of the most interesting, hardiest and most picturesque trees which have been introduced into the United States, and if a man wants to plant for posterity, for it must not be forgotten that it has taken from five hundred to one thousand years to build up the great Ginkgos of Japanese and Chinese temple gardens, he is reasonably safe in selecting this tree for his purpose.

Cephalotaxus is a genus of small trees and shrubs with spirally arranged linear, sharp-pointed dark green leaves twisted on lateral branches into an apparently two-ranked arrangement, dicœcious flowers, in stalked axillary heads, the staminate numerous, clustered and capitate, the pistillate in terminal spikes, and drupe-like fruit, similar to that of the Ginkgo. The genus is Asiatic, and its half-dozen still badly defined species are scattered from Japan and northern China to the eastern Himalayas.

The species most frequently seen in our gardens and the only one well known here, Cephalotaxus drupacea, is a native of Japan and probably also of northern China. In Japan it is generally scattered through mountain forests, extending northward to central Yezo, where it grows on low hills as an undershrub two or three feet high of the deciduous forest, while on the Hakone Mountains, in Hondo, it becomes a bushy, shapely tree, often twenty-five feet in height. Cephalotaxus drupacea is generally hardy in the eastern states, although it frequently suffers in severe winters in New England. Near New York and Philadelphia, where it is more flourishing, it produces fruit abundantly, although in this country it remains shrubby in habit and is really more interesting as a type of a peculiar genus than it is as an ornamental plant. Cephalotaxus drupacea was sent to the Botanic Garden at Lyden by Von Siebold in 1829. He described another species, Cephalotaxus pedunculata, a very obscure plant and, perhaps, a garden form of C. drupacea, from which it seems to vary chiefly in its longer leaves, or a Chinese species, as there is apparently but one Cephalotaxus growing wild in Japan. I have not seen it in our gardens. There is what is believed to be a Japanese fastigiate form of this plant in gardens (var. fastigiata) with branches as erect as those of the Irish Yew and very dark green foliage; not hardy in eastern New England, there are good plants of this form near New York and Philadelphia. This plant is often known in gardens as Podocarpus Koraianus, Taxus Japonica, Podocarpus Japonica and Cephalotaxus Burgeri. Cephalotaxus Fortunei, a native of northern and central China, is the most beautiful of the cultivated species, with lustrous dark green leaves, pale on the lower surface and three or four inches in length. In Europe this is considered the most desirable of the genus as a garden plant. I do not know it, however, in this country and find no reference to it in American garden literature later than the note nearly thirty years old in Hoopes' *Book of Evergreens*. Like many other north China plants, however, it may be expected to thrive in New England.

The different species of Cephalotaxus flourish in deep rich soil and require protection, especially until they are fully established, from the winter sun. *C. S. S.*

The Hamburg Exposition.

THE Gartenbau Austellung, which is now closing at Hamburg, is the largest and most important effort yet made to show the resources of the horticulturist. It was conceived in a broad and generous spirit, and has been carried to a finish with remarkable energy and sagacity. The time and circumstances have been auspicious for a great exhibition. The Germans are feeling the effects of industrial and commercial expansion, and exhibitions may almost be said to be a craze with them. Hamburg is not only an important horticultural centre, but it is one of the greatest marts of the world. It has an immense fleet of ships reaching many countries. This touch with foreign trade has bred a most conspicuous public spirit, without which a horticultural exposition continuing through five months could not have succeeded. The steamship companies transported exhibitions free and the people of Hamburg subscribed for about 70,000 season tickets to the Austellung before it had opened its gates.

The exposition is the outgrowth of a local horticultural society, and is under the direction of committees of prominent Hamburg citizens. The state of Hamburg gave 50,000 marks for premiums, and a guarantee fund was raised by subscription. The receipts of the exposition are derived from gate moneys, rent of space, and concessions to restaurants and tradespeople, and have been sufficient to meet all expenditures, to secure the guarantee fund, and to leave a handsome surplus. This happy condition has been brought about, of course, only by the application of the strictest business methods, and yet the intelligent visitor must be impressed with the liberality of the management and the courtesy and freedom with which it has extended privileges to students and specialists. One is impressed with the fact that while the exposition is a financial success, its motive is, nevertheless, one of public spirit and a desire for the extension of the influence of horticulture.

The site of the exposition is ideal. A public park of about thirty-five acres, splendidly diversified with hill and dale, glade and wood, water and sward, has been made an Eden of color. The effects of herbaceous plants are naturally paramount. Dahlias, Geraniums, Lilies, Gladioli, Azaleas, Rhododendrons, Roses, tree Fuchsias, burning carpet beds, have been some of the most conspicuous

features of the outdoor displays. The greater number of exhibitors have been Germans, but there has been conspicuous coöperation on the part of Belgians, English, Italians, French and other nationalities. America has been represented by but few displays, the most prominent being a very large and fine exhibit of evaporated and prepared fruits from California, and displays of various florist's stock by W. A. Manda. The Americans have certainly lost a distinct opportunity to push their fruit and inventions into European markets. We are looking to Europe to consume our apples and evaporated and canned fruits, and cranberries and other fruits must eventually find an outlet there. The authorities of the exposition urged the Americans to exhibit, and certain Americans endeavored to second their efforts. The apathy of our people in this matter does not speak well for the much-vaunted American thrift. The influx of American apples into Germany last year has thoroughly aroused the people there, and the pomological display at Hamburg represented the abundance and excellence of the fruits of Germany and the Tyrol. The effort was made largely for the purpose of showing that the pomological resources of the Old World are competent to meet the advances of the New World. A thousand barrels of American apples and twenty-five barrels of American cranberries should have been placed in storage in Hamburg in 1896, and the entire course of the exposition should have seen these products on exhibition, and every public function should have seen them supplied to the tables. It would be inexcusable if another great European exhibition should be so completely ignored by the American public.

While the Austellung has been a continuous display from the first of May until the early part of October, there have been several great events, of which the spring exhibition, the autumn exhibition and the pomological display have been chief. The autumn show (Herbst-Austellung), opening late in August and lasting a week, was undoubtedly the grandest display of plants and flowers ever made. Over five hundred exhibitors were represented, and others were turned away because of lack of room. It would be futile to attempt to designate particular exhibits of great merit, but one could not help observing the great Palm exhibit of Winter, of Brodighera, Italy, the choice and rare plants of Sanders, the incomparable Gladioli of Lemoine, and the prodigal display of cut bloom by the Erfurter Handelsgärtner. The Erfurt display received the Laeisz prize of one thousand marks for cut flowers. Prominent features in this display were China Asters, tuberous Begonias, Gladioli, Marigolds, Petunias, Dahlias, Verbenas, Pansies, Zinnias, Celosias, Immortelles and Phloxes.

Dahlias were profuse in the autumn display. Many exhibits were permanent plantations in the grounds, but not all of these were successful. It was apparent—as it is to all Dahlia growers—that soil, season and date of planting exert most powerful influence upon the prolificacy and character of bloom. In the Dahlia plantations the Cactus and single classes were deservedly most popular. Matchless was, perhaps, the leading variety. Three novelties deserve special mention for great individuality and merit: Perle de la tête d'Or (an unfortunate name for a white variety) is a most beautiful clear white semi-Cactus French novelty, of good habit and very floriferous, larger than Matchless, and, to my taste, the best introduced novelty displayed at the exposition; Cannell's Gem, a very fine salmon-red Cactus Dahlia; Stolzer Riese, a large and broad-rayed single, with very long stems, maroon-claret shading to rose. The hauptpreis of 100 marks was awarded to a collection of cut Dahlias comprising 800 varieties. Two striking novelties exhibited as cut blooms were Loreley, a large shell-pink Cactus, and Hohenzollern, a very large salmon-buff Cactus. The former is to be introduced in 1898, and the latter in 1899. Cannas were poor, and none of the prizes offered for novelties were awarded. This does not prove that the novelties may not have had distinct merit, but they did not reach expectations in the grounds at Hamburg, a circumstance which may have been due to soil, lateness of planting, or other local causes.

The merit of the Austellung lay quite as much in its general plan and effect as in the technical details, and it was this general character which contributed mostly to its wonderful financial success. Thousands of persons who are not interested in horticulture itself must have been touched with the possibilities of the art by visiting the exposition, and must have received an insatiable desire to enjoy the beauties of plants and to introduce them into their own homes.

Cornell University. *L. H. Bailey.*

Foreign Correspondence.

London Letter.

Hibiscus Manihot.—When treated as a greenhouse plant this old annual species of Hibiscus grows to about a yard in height, and is pyramidal shape, clothed with palmately-lobed, dark green, smooth leaves about six inches long, and produces in autumn handsome cup-shaped flowers, five inches in diameter, colored golden-yellow with purple centre. It is a native of China, but has long been naturalized in Bengal, and is commonly cultivated in tropical countries. It was introduced into English gardens nearly two hundred years ago, and has been tried as a summer bedding plant. Recently it has attracted attention through some plants that were sent to a meeting of the Royal Horticultural Society by Mr. Lambert, of Cookham, who sowed the seeds in heat in February and grew the plants outside in summer. They were shown in August, and received an award of merit.

Lilium Harrisii.—The Bermuda Lily is an extremely popular garden plant in this country, large quantities of the bulbs being annually imported from Bermuda, where they are grown in fields for the American and European markets, the annual output being estimated of the value of £20,000. The appearance of a fungoid disease in the fields there has somewhat crippled the industry, still quantities of the bulbs are being received from Bermuda now, full-sized bulbs realizing about fifty shillings a hundred. This bulb is also being grown on a large scale in Natal, from whence an experimental importation was received in London in April last and sold by auction. These were equal in size and quality to the best samples from Bermuda. Two hundred were secured for Kew, and were planted in pots and placed on a cinder bed in the open air. They grew and flowered perfectly in August and September, and proved most valuable for open-air beds and in the conservatory. The Bermuda bulbs flower in April and May.

Macrozamia spiralis.—Of the numerous species of Macrozamia that have been introduced from Australia this is the most useful for ordinary garden purposes, as it grows freely and soon forms an elegant pot-plant. Its dark lustrous green fronds are plumose, and it is almost as graceful as Cocos Weddelliana. It is being grown in quantity by one of our leading market growers, who imported seeds of it from Australia, and is now offering it under the name of Zamia elegans. All the Macrozamias are ornamental, but they do not all grow freely. M. spiralis is the type of a group of species which in stem and foliage closely resemble each other, namely, M. Fraseri, M. Moorei, M. corallipes and M. Dyeri. These are all grown in the stoves at Kew. M. Fraseri is abundant in Victoria, often occupying large areas, generally where the soil is poor. It sometimes forms a thick trunk six feet high. These stems are easily imported, and seldom fail to grow with ordinary care. A few years ago I bought for sixty shillings two stems, each of which weighed half a hundredweight. These are now handsome specimens in the Palm-house at Kew.

Bougainvillea glabra Sanderiana.—I lately saw some beautiful examples of this plant which had been treated differently from the usual method. Cuttings had been struck and the plants grown on in heat, but the shoots were kept pinched until a shrub a yard high had been formed.

After two years of this treatment the shoots were allowed to grow, but as the plants were in eight-inch pots the growth was not too vigorous. By July handsome irregular bushes had been formed and flower-buds showed in abundance. The plants were then placed outside, where during August and September they were beautiful objects, being heavily laden with flowers several shades deeper in color than those produced under glass. I believe this plant might be grown to flower on a south wall outside in summer.

Aberia Caffra.—This, the Kei-apple of south Africa, is again receiving attention, being recommended as a hedge plant for subtropical countries, and its fruit for making jam. It has long been grown for both purposes in south Africa, and I remember seeing about ten years ago a fine hedge fence of it along one side of the Grahamstown Botanic Gardens, thicker and stronger than the stoutest quick hedge and, with its long stout thorns, forming an almost impenetrable barrier to all kinds of animals. It is used in New Zealand, where, according to the *Waikato Times*, it forms a sturdy, short-jointed grower, an evergreen with thorns six inches long, which are a perfect terror to evil doers, be they beasts or human beings. It fruits freely, and the fruits are of the size of green-gage plums. Professor Macowan, of Cape Town, says of the fruits that although few people like to eat them raw, they make first-rate jam. He recommends a mixture of Kei-apple with tomato as a good jam. This plant fruits freely in the garden of Mr. T. Hanbury, at Mentone, on the Riviera.

Cereus triangularis.—An old plant of this night-flowering Cactus has, this year, fruited at Kew, and the fruits are so large and handsome, and moreover so palatable, that cultivators might do worse than turn their attention to this plant as a fruit producer. The fruit is as large as an ostrich-egg and weighs two pounds; it is of a bright rosy crimson when ripe, and the pulp, of which there is as much in each fruit as there is "meat" in an ostrich-egg, is soft, white, sweet and agreeable to the taste. The small black seeds, although numerous, are no detriment, as they are soft and tasteless. There appears to be at least two forms of the plant, one having fruits only about half as large as those produced at Kew. In such states as Mexico and Florida this plant would, no doubt, grow vigorously and fruit freely without much trouble.

Nicotiana tomentosa variegata.—The type, better known under the name of Nicotiana colossea, is one of the handsomest of large-leaved plants for subtropical bedding, for which purpose it is superior to the Wigandia. It is now largely grown in English and French gardens, attaining a height of six or eight feet in a season, with leaves a yard or more long and two feet wide. It was introduced from Brazil about ten years ago. I lately saw in the nursery of Monsieur Sallier, in Paris, some plants of a variety which were remarkable for the richness of their variegation. They were more than a yard high, very leafy, the leaves large and their color soft green with a broad, irregular band of creamy white, most of the leaves being more white than green. It comes true from seeds. It also may be propagated from cuttings. It grows with great vigor in the open air, colors without fail, no matter how strong the growth, and it does not burn in bright sunshine.

Fig. 50.—Gardens of Penshurst Place.—See page 389.

Bedding Begonias.—The best bedding varieties among the tuberous varieties that I have seen this year are the following: Lafayette, scarlet; Major Hope, pink; Julia Marnier, yellow; Madame E. Turtle, white; Virginia Vanchon, pink and yellow. These are all dwarf and compact, with small leaves, and the flowers stand well up on stout stalks. Their colors are clear and good. Beds of these in the flower garden are as effective as those of the best Pelargoniums.

London. *W. Watson.*

Entomological.

A Willow Pest.

THE destructive Willow-borer, Cryptorhynchus lapathi, is another insect which has found its way from the Old to the New World, and has now become well established in its new home. The first published notice of its appearance in this country seems to be that given by William Juelich in *Entomologica Americana* for 1887 (vol. iii., page 123), who says in that year he found it infesting a Willow in West Bergen, New Jersey, and that five years previously, in 1882, he had found his first specimen in another locality. In the same season it was found in the northern part of New York City. During many years it has been known to occur in Cambridge, Boston and in their vicinity, and for several years it has proved destructive to almost all species of Willows growing in the Arnold Arboretum. It has been found boring in stems of all the native Willows with the exception of a few mountain or very slender-stemmed species which are too small to afford the borers sufficient sustenance or give them tissue enough in which to make their borings. Of the foreign Willows which become large trees, such species as the White Willow, Crack Willow and Laurel-leafed Willow are more or less attacked, but seem to be less liable to serious damage than the Babylonian Weeping Willow. Besides Willows, this borer has been found to attack all the cultivated Poplars in the Arboretum, particularly when these trees are young, and this season it has been rarely found in small plants of two species of Birch, the Dwarf Birch, Betula pumila, and the Red or River Birch, B. nigra. In Europe it has been reported as boring in Alders. These instances give a hint of the possible increase in the variety of plants upon which the insect might thrive. So abundant is the pest and so extensive its ravages that it is rarely possible to find a good healthy plant among the shrubby Willows in many localities about Boston. In the shrubby species most of the larvæ are found boring in the lower parts of the stems or nearest the ground, but in those which reach the stature of trees the pests are often found in the higher parts of the stem and the higher limbs.

Cryptorhynchus lapathi is a beetle belonging to the great curculio family, which contains thousands of species, and it has been long known in Europe, where it is often mentioned in entomological writings and essays on the culture of Willows. It was described as Curculio lapathi by Linnæus, and by later authors placed in the genus Cryptorhynchus. Wherever they occur in eastern North America the beetles may be found during July and August on the bark, or sometimes on the foliage of the plants they infest. They are generally not very active in their movements, and when alarmed fold their legs and drop to the ground and remain quiet for a time, in which condition they are not easily seen on account of the fact that their colors and markings harmonize with most soils and débris.

The body varies in different individuals from one-third to three-eighths of an inch, or slightly more, in length. The general color is dull black, with a few very short jet black tufts of bristles or scales upon the wing covers and thorax. Under a magnifying glass the wing covers or elytra are each plainly pitted or indented in ten longitudinal rows, and the thorax is also minutely but irregularly punctured. Scattered over the forward half of the wing covers are numerous minute whitish scales, which are mostly so placed as to form a more or less distinct, broad V-shaped mark, and the tips of the wing covers for about one-third of their length are almost white, with a dense covering of these light-colored scales.

The under side of the abdomen is black or with a few scattered whitish scales upon it, and the sides of the thorax are densely covered by white scales. The head and proboscis are black, the proboscis usually withdrawn, except when the beetle is active. The legs are black, but marked by numerous white scales disposed either singly or in groups and particularly numerous on the femora, which are usually distinctly whitish on the basal halves of the first pair of legs.

During the summer the eggs are deposited by the beetles in or upon the bark of the Willow or plant attacked; they are hatched soon afterward and the young grubs eat their way into the stem. During the summer and autumn they attain only part of their ultimate growth, remain dormant during winter and continue their boring in spring and reach full size in June or early July. When fully grown the larvæ are between three-eighths and one-half of an inch in length, fleshy, of a dull white color, with brown head and darker mouth parts and an oblong brownish shield on the first segment, back of the head; they are provided with six very short tubercle-like legs on the anterior segments. When fully grown the grubs or borers change to pupæ in their burrows in the wood, and in two or three weeks afterward emerge as beetles. Commonly, larvæ, pupæ and beetles may be found at the same time. Very often the stems of Willows are so riddled by the numerous boring larvæ that there is neither fresh tissue nor sapwood left through which the sap can pass, or old tissue or heart wood to support the stem erect, and death or breaking down follows.

In spring the plants infested are usually indicated by quantities of fine chippings or "sawdust" on the bark or around the base of the stem. Much sap escapes through the holes out of which the sawdust is thrown, and sap-loving beetles and other insects are often plentiful on the bark or among the débris.

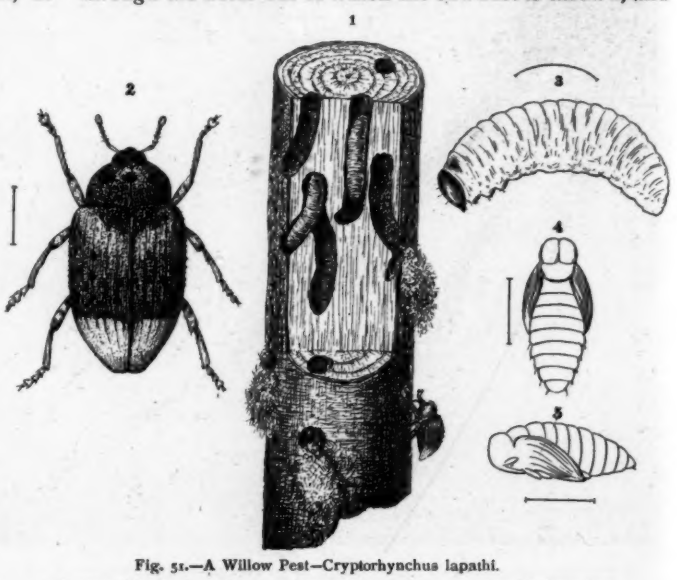

Fig. 51.—A Willow Pest—Cryptorhynchus lapathi.
1. Section of infested wood. 2. Beetle (enlarged). 3. Larva (enlarged). 4. Pupa, dorsal view (enlarged). 5. Pupa, side view (enlarged).

As to a remedy, the cutting out of all infested parts in spring would seem the best, but as any wild Willows, or even plants of other genera, may harbor the pests the idea of extermination cannot be entertained. Where a few choice plants are to be protected heavy soap washings, applied on the bark in July and August, may prevent egg-laying by the beetles. Some parasites have been observed, and these may help to keep this Willow-borer from becoming unduly abundant. At least eight or ten species of parasites are said to affect this Cryptorhynchus in Europe. It is recorded as a native of Siberia and other parts of northern Asia as well as Europe.

The above figure has been made by Mr. C. E. Faxon.

Arnold Arboretum, Jamaica Plain, Mass. *J. G. Jack.*

Cultural Department.

Some Autumn Flowers.

KNIPHOFIA NELSONI proves to be a fine addition to the lengthening list of Tritomas. It is distinct in having narrow foliage and small flower-spikes with most intense coloring, the latter a desirable feature in a Red-hot Poker-plant. This variety is the best of the smaller kinds, and specially useful in the front row. Like most of the Kniphofias, it probably would not survive an ordinary winter outside. If it were not for this lack of hardiness these would be much more desirable plants; but in a large collection of plants and bulbs there is such a continuous lifting and replanting through the year that the operation seems less troublesome than when only some odd plant requires this care.

Aconitum autumnale, while an old plant, is so neat in finish, both of foliage and flower, that it seems well again to say that it flowers at about two feet in height, with very dark shining leaves and plentiful purple-hooded flowers. It is perfectly hardy, never affected by insects, and may be ranked among the few best autumn-flowering plants. The best of all autumn-flowering plants is the white variety of Anemone Japonica, which is not only beautiful, but is in every way desirable. It occasionally disappears in winter, though it is usually reliable.

Asters are such common flowers in the fields and meadows that many growers do not fully appreciate their beauty in gardens at this season. They flourish under cultivation, and though they do not give large flowers the plants become more branched than when struggling for existence, and produce a multitude of attractive blooms. The British give names to the different garden forms, and these added to the numerous species make an endless variety if the cultivator desires a collection. All the plant-nurseries furnish an assortment, seldom properly named, or one can pick up promising kinds in wanderings afield. It must be said, however, that Asters are seed-bearers, and have capacity for taking possession of a garden. The white Boltonia asteroides is quite the prettiest of the Aster family for that color, though its flowers are not the largest. Their effect is Aster-like, though the botanist allies them with the Stenactis.

Elizabeth, N. J. *J. N. Gerard.*

THE mild weather is prolonging the season for autumn flowers. Sedum spectabilis is just now showy with large umbels of pink flowers. This plant may be increased from cuttings at almost any time, and even flower-stems placed in four-inch pots take root and make nice plants for conservatory decoration. The pretty purple-flowered Plumbago Larpentæ is one of the best rock-plants. It makes a healthy-looking mat of foliage and blooms from June onward in a sunny position. Statice latifolia is one of the best of the Sea Lavenders, and the sprays of small flowers with persistent blue-colored bracts remain for a long time in perfection; in fact, these plants are scarcely ever out of bloom from midsummer until frost. Silphium terebinthinaceum, the Prairie Dock, is a majestic plant for the shrubbery border or wild garden. The whole plant is glaucous, and the large leaves, with deeply indented margins, are nearly all basal. The stems rise to eight or ten feet in immense cymes with large starry yellow flowers. Tall plants of Boltonia latisquama and B. asteroides held together by a stout cord look like immense wheat-sheaves; these are covered with small pink and white Aster-like flowers. Aster amelloides is one of the best of the dwarf kinds, with large violet-blue flowers. Salvia Pitcheri, with long spikes of deep blue, is highly effective just now. The single Helianthus multiflorus is worthy of more extended culture. I have always doubted whether this is the type of the double Helianthus commonly seen; the single form is hardier. Geranium sanguineum attracts general attention; it is never untidy and always in bloom. The white-flowered Eupatorium ageratoides and E. cœlestinum both suggest the common Ageratum. They are among the best of our hardy border plants. Add to these Pyrethrum uliginosum, Anemone Japonica (pink and white), the Kniphofias or Tritomas and Funkia subcordata, and we have quite a list of flowering plants for an autumn garden.

Wellesley, Mass. *T. D. Hatfield.*

Phloxes (Decussata section).

THE perennial varieties of these Phloxes, of which P. paniculata appears to be the principal progenitor, are among the most useful and satisfactory of our garden plants. They have justly received considerable attention from hybridizers of late years and rapid strides have been made in their improvement, both in the size and substance of the individual flowers as well as in size of truss. Several new shades have been added and the flowers now range through different tints of red, rose, carmine and purple, and even the white sorts are more nearly pure white than the older varieties. Among the white varieties selfs are most abundant. The majority of the other shades have the eye of a brighter or darker shade than the ground color of the flower. A few of the best white varieties are White Queen, Jennie D'Arc, White Lady and The Perle. Marie Stuart and Miss Lingard, two excellent varieties, are both white, with pink eye. In the rose section, Lothair and Puritan are both good. Sir E. Landseer is one of the best representatives of the carmine section, while Albatross is probably the best of all the purples. In the brighter or red section, Aurora Boreale and J. H. Slocum are both good varieties. But their variety is so great that it is needless to enumerate more.

It has been said that Phloxes are plants of the easiest cultivation and do well with very little care. We have always found that they respond quickly to generous treatment, and if provided with a moderately enriched soil, plenty of water when necessary and a good mulching in winter they will more than repay this extra attention by the increased number and larger trusses of flowers. Whether planted in the shrubbery, herbaceous border or in beds by themselves, Phloxes always show to good advantage. They are also useful for cutting, and some of the varieties are highly scented. Sometimes it is complained that their peculiarly sweet odor becomes oppressive in a close room.

The most convenient method of propagation is by division of the crowns, and the scarcer varieties may be propagated by cuttings made from the young shoots. Phloxes are readily propagated from seed, which, however, produce variable results, seedlings seldom coming true to name. Seeds should be sown in the greenhouse in fall, and will in most cases give plants strong enough to produce flowers the following season. We seldom allow them to bloom much the first season, and prefer to cut the flowers off after they have shown their color. They are thus encouraged to make good plants for another season.

Tarrytown, N. Y. *William Scott.*

Chrysanthemums.

CHRYSANTHEMUMS which have been growing out-of-doors should be housed by the end of September. They may, of course, remain out until frost is threatened, but nothing is gained by the delay. From the first of October onward a little fire-heat will be found beneficial, as the atmosphere is thus kept dry and mildew prevented. With fire-heat a little air may be left on at the top. While it is necessary to admit an abundance of air, side draughts must be guarded against. All dead or diseased leaves should be carefully picked off, and if, as often happens, thrips attack the lower leaves, a mixture of sulphur and tobacco-water may be used; this serves at once as a fungicide and insecticide. Insects do not like soot, and I have found it efficacious when used with tobacco-water.

Disbudding must be thoroughly done as soon as the buds can be handled, and larger and better-formed flowers will follow. Many small shoots come up through the middle of the plants which will never become tall enough to be on a level with the other branches. In recent years I have pruned these out, and more air and strength are thus afforded to those remaining.

The month succeeding the middle of October is a time full of interest to growers of specimen plants. It is also one of anxiety, for there is yet opportunity to undo a whole season's work by a single blunder. Less and less water will be required as the buds mature, but never so little that the foliage wilts. The roots may be injured by excessive watering, and a serious loss of leaves follows; no treatment will repair this damage.

If the plants are intended for exhibition the date set is too late for some varieties, and these must be held in check. Such plants should be moved to a cooler shady house if possible, otherwise they must be shaded with tissue paper, especially the pink-flowered varieties. Last season I kept a plant of Joseph H. White without injury an entire week in a light position in a barn cellar. Chrysanthemums do not bear forcing well, in the ordinary way of increasing the amount of heat. Plants housed and others placed in cold frames show no difference in time of blooming. Plants of tender varieties which have been grown indoors during the summer, may be set out for a few days in September for the purpose of checking the growth and to encourage formation of flower-buds.

Wellesley, Mass. *T. D. H.*

Tamarix Chinensis.

BUT few really good autumn-flowering shrubs are hardy and suitable for this climate, and those that are available are not used to the extent which their merits warrant. The beauty of Tamarix Chinensis is strikingly displayed in an isolated clump grown where it shows to advantage, and this beautiful plant deserves more general recognition. The whole genus of Tamarix is beautiful. There is great similarity in the species, but some flower in early summer, while the season is prolonged until late September by T. Chinensis. Tamarix-plants are known as being valuable for seaside planting, owing to their ability to endure the saline atmosphere, and they are used to a limited extent in such situations. But their requirements are not by any means fastidious; any soil will suit them, and we have found them perfectly hardy, even young plants surviving severe winters.

It has been objected that these shrubs soon become bare at the base, and this is true of many plants that are not cared for properly. But there is no real objection to Tamarix-plants if they are cut back frequently near to the base in spring before they start to grow. Indeed, this is the best possible way to obtain strong shoots with large terminal panicles of the pretty rosy pink flowers; when thus treated the shoots start at once from the base, and often attain to great height by the end of summer. This method applies only to the spring-flowering kinds. Those that flower in early summer, as T. tetrandra, should be cut back after the flowering season, in common with all early-flowering shrubs. Too often in small suburban gardens all the shrubby plants are sheared over until they are shaped like more or less symmetrical peg-tops, and all the promise of bloom is shorn off. Inexperienced men will do this sort of shearing as long as the owners are ignorant of the needs of plants, and those who do this kind of pruning are perhaps less to blame than the persons who employ them.

Tamarix Chinensis is admitted to be the best of the genus, and is found in some lists as T. Japonica and also T. plumosa; the latter name is suggested by the dense, plume-like habit of growth and panicles of flowers, which are bright pink in the buds and turn to paler pink on expanding.

We have found this genus extremely easy of propagation. It is an easy matter at pruning-time to cut the smaller twiggy growths into lengths of a foot and put them into the open border the greater part of their length. Most of these will grow if the season is favorable. If a greenhouse is available the cuttings may be inserted in pots earlier in spring, and the plants thus started will be much stronger at the end of the first season and should flower the second year.

In the year 1893 Monsieur Lemoine sent out a new species called Tamarix Kaschgarica, which he raised from seeds collected in central Asia. This flowers in September and has proved to be a good and distinct plant. It was afterward found to be but a form of T. hispida, which has a very wide range geographically. Indeed, the genus has a very wide distribution. T. Gallica is found all along the Atlantic shore of France; T. Indica is a native of the East Indies; T. tetrandra comes from the Crimea; T. Germanica is distributed over a great portion of Europe, among the mountains and along the river banks. All of these species are considered hardy in the eastern states, and all are worthy of a place in gardens, especially where saline or alkaline conditions exist, and where it is difficult to make other plants grow.

South Lancaster, Mass. *E. O. Orpet.*

Correspondence.

Notes from my Wild Flower Garden.

To the Editor of Garden and Forest:

Sir,—I have been much interested in articles in recent numbers of Garden and Forest regarding the cultivation of native plants, for my wild-flower plot has afforded me more pleasure than any other collection of plants.

I wish to suggest the Cranberry-tree, Viburnum Opulus, for planting in the home grounds. The flat cymes are bordered with larger sterile flowers similar to those of the wild Hydrangea, and while less showy than those of its cultivated form, the garden Snowball, are truly handsome. I was first impressed with their beauty on seeing a wreath composed wholly of them. The bush is compact and symmetrical in growth, the leaves glossy and untouched by the "curl," which so often distorts those of the Snowball, and the deep coral berries are not only ornamental, but their sprightly taste is much relished by some as a substitute for the cranberry. It is said that old hunters and trappers classify berries "smooth as glass beads" as poisonous; those with a rough point or outward turned surface as harmless; the Poison Ivy and Nightshade are cited as familiar illustrations of the former, the Rose, Whortleberry, etc., of the latter class. The Cranberry-tree furnishes a striking exception to this rule.

The Spikenard is ornamental when in fruit. Its great clusters of berries in early autumn show a rather unusual blending of rich purple clusters resting among others of clear green. Later all are uniformly dyed in the royal colors. Like so many of our native plants with real or reputed medicinal value, this plant is being rapidly exterminated from its native haunts. The ease with which it adapts itself to garden culture will happily prevent its extinction.

The tall Meadow Rue, which dropped its creamy sterile flowers several weeks ago, still retains the fresh green pedicels, giving to the plant a somewhat plumose appearance when seen from a distance. Viola striata has bloomed more or less all summer, and now (September 13th) has several blossoms. Ruellia ciliosa, which is not indigenous, but transplanted from the western prairies, has proved highly satisfactory, its chief merit being in its constant, rather than profuse, floral display during the midsummer months.

Coronilla varia, also a non-resident of this locality, was transplanted from New England a half-decade ago, and finds place in a spot left bare in summer by the dying down of Hyacinths and Tulips. At first its growth was slow, but finally it entered into a combination with its neighbors, Lily-of-the-valley and Trifolium procumbens, the latter also a stranger in these parts, and the trio soon had full possession of the ground. Last year all were removed to the base of a neighboring tree, where they grow as they wish. But the subterranean growth of the Coronilla quite surprised us, and though we tried to get it out entirely, thrifty plants still appear from time to time on the old site and suggest its vitality when once established. The delicate foliage and dainty blossoms are much admired in their place, but they should not be planted in beds of spring-blooming bulbs.

The wild Yam, Dioscorea villosa, and Moonseed, Menispermum Canadense, are admirable; both have clean, glossy leaves, the venation and cut of which are in decided contrast. The outline of the Moonseed is decidedly unique, and once seen will be readily recognized. My plant flowers freely, producing only sterile flowers. Its growth is much more rapid and robust than that of the Yam.

Some one has described Apios tuberosa as valueless, but while the blossoms are not showy, their form and color are pleasing. The plant grows rapidly and blooms profusely, and many exotics are not nearly so desirable.

Harmonsburg, Penn. *Bessie L. Putnam.*

Meetings of Societies.

The American Forestry Association.

THE special autumn meeting of the American Forestry Association, with attendant excursions, was concluded at Nashville, Tennessee, on September 22d, 1897. The plan of combining excursions to special points of interest as joint features of the meeting, proved to be most interesting and valuable, and reflects special credit upon the gentleman in charge of arrangements. It is to be regretted that a larger number of members could not attend, and only fifteen were present for the entire trip. The excursion party met at Washington on the evening of the 16th, en route for Biltmore, North Carolina, the first point of interest. Carriages were waiting and the party was taken in charge by Dr. C. A. Schenck, head-forester of the Biltmore estate. Dr. Schenck thoughtfully supplied each member with a printed catalogue describing all the forest compartments of the estate to be visited, the short history of which could be quickly read as each numbered section was passed. An inspecting tour of the various forestry operations now under way at Biltmore was directed by Dr. Schenck. The large tract of old farm fields, together with mountain, brush and forest land comprising some 13,000 acres, affords the largest opportunity for the application of European forestry principles and practice, with which Dr. Schenck is thoroughly conversant and laboring zealously to apply to American conditions. We cannot pass over the elaborate preparations and pains taken by Dr. Schenck to make the association's visit both profitable and felicitous. Special temporary foot-paths were cut through the brush, weeds and forest growths, by which certain forestry operations could be more easily reached and viewed. Various methods and stages of regeneration were exhibited, including direct planting of seed

and transplanted seedlings consisting chiefly of Oaks, Chestnut, Ashes, Black Cherry, Tulip-poplar, Maples and White Pine. The party was also taken through a number of natural forests in which was explained the evils of the common and the value of the correct method of cutting and taking out useful and ripe timber without the usual damage to young growing stock. In still other plats the practical effect of interlucation on natural regeneration was exhibited. Well-stocked forest nurseries and seed-beds conveniently located were visited and the methods of producing young stock for plantations duly explained. At the conclusion of a hasty survey of these interesting operations the party was conducted to the home of Dr. Schenck, which is pleasantly situated on one of the many hills overlooking the broad valleys and distant mountains, and combining in its immediate surroundings and furnishings a forester's ideal home. The visitors were cordially welcomed by Mrs. Schenck and hospitably entertained.

An evening session of the association was held at Battery Park Hotel, the chief feature of which was an address by Dr. Schenck on Forest Finance. The address was confined strictly to the money aspect and profits of forestry operations and was lucidly set forth. The paper was concluded by an elaborate exposition of charts, photographs and sections of trees, illustrating studies in the current and annual growth of important timber-trees in the Biltmore forests. Numerous specimens of lumber and other wood products of the estate were shown as examples of the available timber supplies, together with various tools and appliances used in sylviculture. The members were provided with a neatly printed pamphlet containing Dr. Schenck's address in brief form.

In the absence of Mr. M. V. Richards, Land Agent of the Southern Railway, who was to address the meeting, a short paper was read for him by his representative, Mr. James H. Best. The paper was devoted to a general rehearsal of the manifold uses of various classes of woods, with an earnest plea for the preservation of the southern forests. The meeting was concluded by a vote of thanks to Dr. Schenck for his elaborate preparations in behalf of the association meeting.

The morning of the 18th was spent in another visit to Biltmore, in which Dr. Schenck took the party over portions of the estate not seen the previous day, pointing out the agricultural and horticultural operations, also forest road-building, retention of washed lands and other general features.

At midday the party left for Chattanooga, Tennessee, where it took quarters at the famous Lookout Mountain Hotel. The following day was spent in an excursion to the battle-grounds of the vicinity, Missionary Ridge and Chickamauga Park, and a part of Monday in examining the forest growth and other points of interest on Lookout Mountain. Through the courteous attention of Mr. B. L. Goulding, Secretary of the Chattanooga Chamber of Commerce, the pleasure and interest of the visit to Chattanooga were greatly enhanced. Taking train from Chattanooga, the party reached Nashville Monday evening, and spent the following day in sight-seeing and visiting the Exposition grounds.

On Wednesday, September 22d, the principal meeting of the association was called to order at 10.30 o'clock, A. M., in the assembly hall of the Children's Building. Colonel E. C. McDowell, of Nashville, presided and opened the meeting with a few remarks upon the great need of some forest policy for regenerating the rapidly disappearing supply of southern timber, adding the hope that the present meeting of the association would stimulate local interest in so important a movement. In the absence of Major J. W. Thomas, of Nashville, who was to have given an address of welcome on behalf of the city and Exposition, Colonel J. B. Killebrew was introduced as Major Thomas' representative. Colonel Killebrew gave a warm and cordial welcome to the members of the association, touching upon the forest needs and resources of Tennessee. The Vice-President of the association, Mr. J. D. W. French, responded to the address of welcome, and spoke at some length upon the great need of legislative action toward the protection and administration of public and private forests. He cited the private estate of Mr. Vanderbilt as a fitting example of what should be undertaken on a more extensive scale by state and national government. Colonel McDowell then resigned the chair to Mr. French, who proceeded with the programme. Mr. George B. Sudworth next read a paper on the Forest Flora and Conditions of Middle and East Tennessee. The paper was devoted to the general forest, soil and topographical features of the middle and eastern divisions of Tennessee, with a detailed account of the most important timber species of the various regions, and with special reference to their relative abundance, economic character, development and means of natural regeneration.

Colonel J. B. Killebrew followed with a paper on the Forests of Tennessee. Colonel Killebrew dealt with the general features of Tennessee forests, calling attention to the rapid denudation of the past and present, and then gave a survey of the best-timbered counties of the state, with mention of the principal classes of timber cut for lumber and employed for various economic purposes. He reviewed the rise and present rapid increase of wood-working industries of the state, giving statistics of the principal kinds of manufactures, and closed with an earnest expression of the consequent need on the part of the state of some protection against such rapid and wasteful despoliation of the state's most valuable resource. The next paper on the programme was the Effect of Forest Destruction on Water-courses, by Mr. D. W. Baird, of Nashville, in the absence of whom the paper was read by Mr. H. B. Bond, of Nashville. The paper gave a survey of the well-known results of forest denudation at the headwaters of small and large streams, causing a permanent or partial diminution in their supply of water. The afternoon session was called to order by Vice-President D. M. Riordan, of Arizona. The Secretary of the association, Dr. George P. Whittlesey, read a paper on Forests and Rainfall, by Professor H. A. Hazen, of the United States Weather Bureau. Mr. W. W. Ashe, of Raleigh, North Carolina, also read a paper on the Forest Conditions of Iowa, by Professor Thomas H. McBryde, of Iowa. The paper of Mr. George W. Rafter, of Rochester, New York, on Stream-flow in Relation to Forests, was read by title owing to its length and technical character. The remainder of the session was given up to remarks by several members. Mr. D. M. Riordan gave a very lucid and interesting account of the general soil, climatic, topographical and forest conditions of Arizona, with special attention to the San Francisco mountain region. He described the relative position of the various timber and other woody growths from the plateau to the higher elevations, stating that the chief lumber-tree of the San Francisco mountain region is the Bull Pine, or Pinus ponderosa. An interesting part of Mr. Riordan's address was the definition of several life zones, and notably the one above 5,500 feet elevation, at which the timber Pine of the region begins to appear in a broad horizontal belt.

Mr. J. W. French again referred to the necessity of general forest legislation, especially in the western states, for the protection of the existing forests, and urged the members of the association to enlist their Congressmen in securing such needed legislation. Mr. D. M. Riordan, in discussing the question, acknowledged the necessity of some stringent laws to control depredators and to protect western forest lands, but called attention to the impossibility, almost absurdity, of a few association members being able to instruct their Congressmen until the communities themselves should reach that understanding of the necessity of forest legislation that they should demand of their representatives the passage of suitable protective measures. At the present time he said the common interest of Arizona communities leads them to oppose all forest protective measures and to look with suspicion or ridicule upon any forest missionary work attempted among them.

Dr. Schenck was called upon for a few remarks and stated briefly that all forestry operations should be viewed only from their money-producing power. Growing forests which would not give a net interest of two to three per cent. on the original and current investment should not be considered up to their proper earning power and should therefore be cut down. He explained the necessity of distinguishing between what must be considered profitable individual and communal or state forest lands, the interests of both ownerships being viewed from different standpoints.

Notes.

A society entitled Société des Sylviculteurs de France et des Colonies is being formed in France for the purpose of diffusing the knowledge of silviculture and increasing popular interest in this art.

Mr. Harlan P. Kelsey, whose address at present is 1123 Tremont Building, Boston, has regained control of the Highlands Nursery at Kawana, North Carolina, and is now prepared to supply the shrubs and other plants of the southern Alleghanies, which are the specialty of this nursery.

New-crop hickory-nuts, which have been on sale here during the past two weeks, have realized $2.50 a bushel. Chestnuts, in moderate supply, from the Catskills, in this state, and from as far south as Maryland, have sold for as much as $12.00 a bushel, but within the past few days have rapidly declined in price.

Strings of peppers have quite transformed the usually unsightly fire-escapes of tenement-houses in the Italian colonies during the past fortnight. The glowing scarlet fruits, in various stages of ripening, are freely festooned, and in the bright autumn sunlight lend a distinctly festive appearance to streets usually given over to dull squalor.

Referring to Mr. Watson's note on three varieties of Victoria regia, on page 283 of the current volume of Garden and Forest, Mr. E. D. Sturtevant writes us from Los Angeles, California, that the one alluded to as Dixon's variety is known in American gardens as Victoria Randii, and was introduced by Mr. Edward S. Rand, of Para, and named in his honor by Mr. Sturtevant.

The orange crop of California for the coming season, according to conservative estimates based on the present condition, will amount to from 7,000 to 8,000 carloads, as against 5,000 carloads last year. As 300 boxes are required to fill a car this means an increase of from 600,000 to 900,000 boxes of this fruit. Other authorities consider 4,500,000 boxes as not too high an estimate for the amount of this season's output. California oranges from last season are still offered in the eastern states in the choicest collections of fruits; and in rich quality these rival Rodi oranges, the celebrated summer fruit from the Mediterranean. Since the first shipments of new crop oranges from the Pacific coast are expected here during November, the likelihood is strong that California oranges will hereafter be in market throughout the entire year.

Iris Leichtlini, figured in a colored plate in *The Garden* of September 18th, is one of the smaller Asiatic Irises of the Regeliæ group and was first flowered in Baden-Baden in 1879. This Iris is one of the most quaintly and daintily marked of these interesting plants. It is perfectly hardy in this latitude without protection, and seems to be longer lived than most of those of the allied Oncocyclus group. Their successful culture depends on their having a distinct rest in perfectly dry conditions. They are amenable to cultivation in a cool house, and start naturally into growth at this season, coming into flower in March or April. They must have perfect drainage, as they damp off readily. They are also favorites of aphides. If grown out-of-doors they should be planted late, so that their leaves do not appear above ground before hard weather sets in.

The coöperative enterprise known as the Campbell Fruit-growers' Union, in the Santa Clara Valley, California, was recently described in *The Pacific Rural Press* with interesting details. The Union has done much to systematize and improve methods of handling fruit from the time it leaves the orchard until it reaches the market. The shrinkage of each lot is tested, so that the grower shall receive an exact equivalent according to the curing value of his fruit, as well as according to its size and quality. The cost of grading, curing and packing has been greatly reduced, uniformity in the product has been established, and in many ways the growers who have coöperated to furnish a superior grade of dried fruit are securing a fair share of its market value. Twenty-five tons of fruit are bleached here at one time, and seventeen acres are used for drying the fruit in the sun, a double line of steel railway extending to the most distant portions of the tract. The plant has a capacity for curing 7,000 tons of fruit in a season.

Jonathan apples, from Missouri, are now among the choice offerings of this fruit, and other good varieties of apples are Twenty-ounce, Holland, and Fall Pippins, Maiden's Blush, King, Ben Davis, Baldwin and Greening. Selected hand-picked apples of these varieties cost from $3.00 to $5.50 a barrel at retail. The receipts of apples in this city last week amounted to less than 21,000 barrels, and in the corresponding week of 1896 reached nearly 47,000 barrels. Many of the peaches now coming from New Jersey are small and generally undesirable, and these sell for fifty to seventy-five cents for a basket holding five half-pecks, while the highest grades command $1.50. Besides Seckel and Bartlett pears there are now in market Buerre Bosc, Sheldon, Buerre d'Anjou, Buerre Clairgeau, Swan's Orange and other late sorts. Just after the last huckleberries had disappeared from our markets, and when it seemed certain that the season for summer berries was ended, second-crop strawberries were unexpectedly received by the crate from fields in southern New Jersey. These comparatively limited supplies sold in Washington Market last week at forty-five cents for a quart box. The berries were of medium size, fully ripe and quite showy. Wintergreen berries sell for fifteen cents a quart, and are in considerable favor for eating out of hand. The first Jamaica oranges, well ripened for so early in the season, reached this port last week in a lot of sixty-one barrels; twenty barrels were at once reshipped to England. Florida oranges were another novelty in this city last week, and sold at high prices. This season's orange crop in that state is estimated at 250,000 boxes. Seventy carloads of California fruits were sold here last week, grapes constituting the bulk of these supplies.

The Smithsonian Institution has undertaken to bring together all available information relating to the medical uses of plants in the United States, and arrangements have been made with the body representing the Pan-American Congress to prepare a report on this subject. A sub-commission for the United States consists of Dr. Valery Havard, United States Army, chairman, Dr. Coville, botanist of the United States Department of Agriculture, Dr. Millspaugh, curator of the Botanical Department of the Field Columbian Museum of Chicago, Dr. Charles Mohr, of Mobile, Dr. W. P. Wilson, director of the Philadelphia Commercial Museums, and Professor Rusby, of the New York College of Pharmacy, who is also chairman of general commission. This committee solicits information concerning the medical plants in the United States from every one in a position to accord it. All packages and correspondence should be addressed to the Smithsonian Institution at Washington and marked on the outside "Medicinal Plants for the United States National Museum." Franks which will carry specimens, when of suitable size, together with descriptions and notes, free of postage through the mails, will be forwarded upon application. Some of the principal subjects which will occupy the attention of the committee are the local names and uses, geographical distribution and degree of abundance of medical plants; whether they are collected for market, whether they are cultivated or have been, with methods of cultivation, and whether the drugs obtained from them are subject to adulteration. In order to assist in the study of the habits, properties and uses of our medical plants the sub-commission undertakes to furnish the names of any plant specimen received, together with all desired information concerning it available. The sub-commission requests that all plants sent shall be represented by at least four specimens.

The exhibition of flowers, plants, fruits, vegetables and cereals in connection with the sixty-sixth fair of the American Institute of the City of New York, began in Madison Square Garden last week. More than 20,000 Dahlia flowers were staged for competition. In the class which required not less than a hundred varieties and six blooms of each kind, above 300 varieties were shown by W. P. Peacock, Atco, New Jersey, and as many by H. F. Burt, Taunton, Massachusetts. These growers were awarded first and second prizes in this class, and also shared honors in other important classes in competition with other exhibitors. There were exhibits of single, double, pompon and cactus Dahlias by professional and amateur growers. The displays of hardy and half-hardy perennials were especially showy. A. Herrington, gardener for H. McK. Twombley, Esq., Madison, New Jersey, showed some new hybrid Tritomas; among these Star of Baden-Baden was specially good, as was Ophir and H. Cannell. One hundred vases of Gladioli, each holding from six to twelve immense spikes, comprised one of the brilliant exhibits in this unusually good show. These came from John Lewis Childs, Floral Park, New York. Other flowers shown by the same grower were Tritomas, Montbretias, Phloxes and Tuberous Begonias. The new, deeply fringed double Hollyhock, Altoona, was awarded a certificate of merit. Carl Blomberg, gardener for Oakes Ames, Esq., North Easton, Massachusetts, made a large and instructive display of wild flowers and received a first-class certificate for flowers of Nymphæa cœrulea striata, never before exhibited, and N. Eastoniensis. Besides a large collection of decorative plants, the F. R. Pierson Co., Tarrytown, New York, exhibited a new scarlet Canna, Tarrytown, which received a first-class certificate for intense color, free-flowering qualities and general usefulness. Vegetables of extra quality were shown in large variety by J. M. Thorborn & Co., and one of the most popular exhibits in this remarkably interesting show was a collection of chestnuts, walnuts, hickory-nuts and filberts from the Pomona Nurseries, Parry, New Jersey. The exhibition will continue until October 23d, different classes and exhibits being shown each week.

William A. Stiles, the editor of this journal, died early this morning, after the main portion of this issue had gone to press.